PATENT ABSTRACTS OF JAPAN

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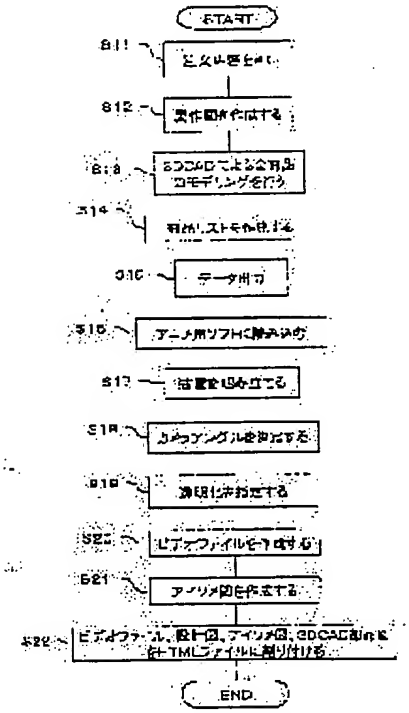
(72)Inventor : HIRAI YOSHIHIRO
KATO SANEYA

(54) METHOD AND MEDIUM FOR PRESENTING PRODUCTION CONTENTS

(57)Abstract:
PROBLEM TO BE SOLVED: To present production contents to a customer in an easy-to-understand state.
SOLUTION: All components are modeled by 3DCAD (S13) and taken in animation software (S16) to produce a video file (S20). Then a plan, an isometric drawing, an animation video file, etc., are allocated to an HTML file. Various files can, therefore, be displayed by browsing this HTML file.



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CLAIMS

[Claim(s)]
[Claim 1] The contents presentation approach of manufacture of being the contents presentation approach of manufacture of showing the contents of manufacture about the equipment ordered by the customer, and showing a customer the animation which shows the whole equipment and a decomposition condition with engineering drawing of equipment.
[Claim 2] The contents presentation approach of manufacture of showing an isometric drawing and three-dimensional-CAD part drawing in an approach according to claim 1 in addition to said engineering drawing and animation.
[Claim 3] It is the contents presentation approach of manufacture offered in an approach according to claim 1 or 2 as a file which can perform said contents of manufacture by computer.
[Claim 4] The medium which recorded the file for the contents presentation of manufacture on which it is the medium which records the file which presents the contents of manufacture about the equipment ordered by the customer, and the animation which shows engineering drawing, the whole equipment, and the decomposition condition of equipment to a computer according to the input from a menu screen is displayed alternatively.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the contents presentation approach of manufacture of showing the contents of manufacture about the equipment ordered by the customer.
[0002]
[Description of the Prior Art] Conventionally, various kinds of equipments are produced according to the order of a customer. In such job order production, although a customer may create engineering drawing of equipment, according to an order of a customer, an equipment producer usually creates equipment engineering drawing. And this equipment working drawing and time for delivery, a price, etc. are shown to a customer, and that equipment is produced and supplied when acknowledgement is acquired by the customer.
[0003] Thus, since the drawing was shown to the customer and acknowledgement is received, the equipment according to an order of a customer will be supplied.
[0004]
[Problem(s) to be Solved by the Invention] However, unlike the image which the customer was drawing [the equipment], when equipment is actually supplied, also when a trouble occurs, it is often.
[0005] Although the working drawing was created in the 6th page Fig. based on general graphics (trigonometry) and this has acquired the approval of a customer based on this, it is considered that a cause is for a customer to be necessarily unable to understand a drawing correctly.
[0006] This invention is made in view of the above-mentioned technical problem, and aims at offering the contents presentation approach of manufacture shown so that he can understand the contents of manufacture about the equipment ordered enough to a customer.
[0007]
[Means for Solving the Problem] This invention is the contents presentation approach of manufacture of showing the contents of manufacture about the equipment ordered by the customer, and is characterized by showing a customer the animation which shows the whole equipment and a decomposition condition with engineering drawing of equipment.
[0008] Thus, according to this invention, animation is contained in the information on the contents of manufacture shown to a customer. For this reason, even if a customer does not have the knowledge about a drawing, it mistakes what kind of thing the equipment manufactured is, and can recognize that there is nothing. Then, when the actually manufactured equipment is supplied, it can prevent effectively that the problem of differing from recognition of a customer arises.
[0009] Moreover, it is suitable to show an isometric drawing and three-dimensional-CAD part drawing in addition to said engineering drawing and animation. Since these can be created at the time of adoption of animation creation, they can be created by very few efforts.
[0010] Moreover, being provided as a file which can be performed by computer is suitable for said contents of manufacture.
[0011] Moreover, this invention is a medium which records the file which presents the contents of manufacture about the equipment order by the customer, and is characterize by to record the file for the

contents presentation of manufacture on which the animation which shows engineering drawing, the whole equipment, and the decomposition cond[redacted] of equipment to a computer according [redacted] the input from a menu screen is display alternatively.

[0012]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained based on a drawing.

[0013] Drawing 1 is a flow chart which shows the procedure of the contents presentation approach of manufacture concerning this operation gestalt. First, a manufacturer hears the order contents of equipment from an orderer (S11). Next, a working drawing as a manufacturer shows to drawing 2 based on order contents is created (S12). In this case, CAD (computer ray dead design) using a computer performs a working drawing. This working drawing all consists of the 6th page Fig. and assembly Fig. of elegance. In addition, a drawing is omitted in part within limits from which manufacture does not serve as impossible.

[0014] The modeling of all the components by 3DCAD is performed based on this working drawing (S13). That is, 3DCAD model is created from the 6th page Fig. about each part article. This 3DCAD model can perform 3D display of components as shown in drawing 3 . In addition, this 3DCAD modeling can be performed using commercial 3DCAD program.

[0015] Moreover, in this phase, the specification about each part article etc. is inputted and the file of a part list is created (S14). That is, information, such as quantity used about each part article in an identification number (unique number in this list), a name of article, a lot number/form, and equipment, a manufacture name, a price, and an order place, is memorized as a table.

[0016] Next, all the components modeling data of 3DCAD obtained as mentioned above are outputted in animation software with the gestalt which can be read (S15). For example, in 3D CAD system, it is suitable to change into the DXF format which the STL format is used widely, once outputs in this STL format, may set this to animation software, and is used. In addition, data format should just be the data format which can be read not only in an above-mentioned thing but in animation software.

[0017] Next, all the outputted components modeling data are read into the software for animation creation (for example, commercial Ray Dream Studio (trademark)) (S16). And it positions about each part article and equipment is assembled (S17).

[0018] Next, camera angle is determined so that it may become decomposition, an include angle good for expressing the animation of attachment, and a good location (S18). The animation (quiescence Fig.) of the whole configuration of equipment as shown in drawing 4 is obtained by it.

[0019] And the situation that constitute the timing to which each part article stands it still, and the timing to operate from on the time line, and animation moves is created. A motion of animation is determined by this. As shown in drawing 5 , the animation which moves to the condition that the components which are assembling equipment separated, one by one is created by this. In addition, signs that the part is decomposed are shown to drawing 5 by by clicking the part of equipment. Thus, it is suitable to create the animation decomposed gradually.

[0020] Here, although the data about each part article are three-dimension data, when an angle type etc. is determined, it is not necessary to hold three-dimension data. Then, unnecessary data are deleted and let them be two-dimensional data. Each part article is freely movable in the condition that camera angle does not change with this. On the other hand, when camera angle changes, two-dimensional data will be connected. However, in the explanation about equipment, the screen which changes and shows camera angle is not so required, and in order to use many screens which each part article leaves one by one, without changing camera angle, there is no inconvenience not much. And by making it two-dimensional data in this way, the data about each part article are lessened, and the load in animation software can be made small, and an intelligible screen can be constituted.

[0021] Moreover, also in the assembly condition, it has all data about each part article. Assignment of the actuation in animation software can carry out very comfortably that what is necessary is just to specify migration as each part article by this when a decomposition condition is shown.

[0022] Furthermore, in the process which creates this time line, components to carry out the rarefaction are

taken out and the transparency factor of that component is set up according to time amount (S19). That is, the rarefaction is carried out by clicking [redacted] component to the timing as which the [redacted]mponent was specified. Moreover, the shade of transparency is set up by assignment of transparency. For [redacted]mple, as shown in drawing 6 , by carrying out the rarefaction of the outside casing etc., internal components come to appear and a internal structure can be seen. Since especially the data of each part article exist, the components which are back [the] will be automatically displayed by the rarefaction.

[0023] And a computer creates an image data file according to the rendering activity of shading, browning, etc. (S20). A video file is created by it while CG screen is formed of this.

[0024] Moreover, an isometric drawing is created based on the predetermined exploded view in animation (S21). An isometric drawing is drawing showing the decomposition condition of each part article seen from the fixed include angle as shown in drawing 7 . This isometric drawing can add and create an alphabetic character required for the two-dimensional data about each part article etc.

[0025] Thus, when each file is created, HTML (HyperText Markup Language) is used and each file is arranged in this (S22). That is, when saying that an alphabetic character is inputted, and a click decomposes components further in an image, or it assembles, or in progressing previously by check click, it arranges and sets up a video file on HTML. Moreover, the alphabetic character for moving to the display of engineering drawing, 3DCAD part drawing, an isometric drawing, and a part list etc. is arranged. In addition, as long as it has the same function, you may be not HTML but other files.

[0026] Thus, the file which unified engineering drawing, 3DCAD part drawing, the decomposition animation of equipment, the isometric drawing, the part list, etc. is created. Then, this file can be perused using browsers, such as a notebook computer, and the working drawing of each part article, 3D part drawing, an assembly Fig., an isometric drawing, and the disassembly-and-assembly animation of equipment can be seen by clicking a desired alphabetic character etc. using the usual browser etc. Furthermore, in each scene of decomposition animation, the decomposition animation about the part is displayed by clicking a desired part, and the external view of the component and the use data about components are displayed by clicking components further.

[0027] Moreover, it is in the condition which displayed the part list, and it is suitable to move to the appearance about the component and the screen of a specification by clicking desired components. In this case, it is also suitable to show whether it is attached in the screen in front of the number screen of the animation of decomposition by being return and animation and displaying to the screen of the components concerned at which part of equipment.

[0028] Furthermore, it is suitable to also create the animation about a maintenance. For example, it is good for animation to explain how a maintenance is performed by preparing a maintenance screen as shown in drawing 8 . In this drawing 8 , the procedure of inspecting whether the gear of a reducer etc. operating normally is shown. That is, a reducer is inspected by detecting the load of attachment and this handle for a handle to a revolving shaft. Spring BAKARI is used for detection of this load. And the screen around which pulls spring BAKARI in a jig and the direction of an arrow head for a handle, and a handle turns is shown a ** table, and it expresses judging a normal thing because the memory of spring BAKARI is 1kg or less as animation in that case.

[0029] Thus, according to animation, actuation can show an actual activity capacity. Then, the work content can be easily recognized also by those who work for the first time.

[0030] Moreover, when a decomposition check activity is shown, while displaying a tool, it is suitable to display the member operated by the tool in a special color. For example, the activity which removes a bolt can be plainly explained by displaying in red the bolt which displays and operates a wrench.

[0031] It is suitable for such contents of manufacture of equipment that the operating company by the side of equipment manufacture brings a notebook computer, calls on a customer, displays engineering drawing, animation, etc. on a notebook computer, and shows it to a customer. Moreover, it is good to provide a customer with CD-ROM which recorded data to the customer on this occasion. Moreover, data can also be offered by communication link. Thus, a customer can see the contents of manufacture after equipment delivery by offering data using a notebook computer etc.

[0032]

[Effect of the Invention] According to this invention, animation is contained in the information on the contents of manufacture shown to a customer as [redacted]ained above. For this reason, even if a [redacted]stomer does not have the knowledge about a drawing, it mistakes what kind of thing the equipment manu[redacted]ured is, and can recognize that there is nothing. Then, when the actually manufactured equipment is supplied after acknowledgement of manufacture, it can prevent effectively that the problem of differing from recognition of a customer arises.

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the contents presentation approach of manufacture of showing the contents of manufacture about the equipment ordered by the customer.

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PRIOR ART

[Description of the Prior Art] Conventionally, various kinds of equipments are produced according to the order of a customer. In such job order production, although a customer may create engineering drawing of equipment, according to an order of a customer, an equipment producer usually creates equipment engineering drawing. And this equipment working drawing and time for delivery, a price, etc. are shown to a customer, and that equipment is produced and supplied when acknowledgement is acquired by the customer.
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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, unlike the image which the customer was drawing [the equipment], when equipment is actually supplied, also when a trouble occurs, it is often.
[0005] Although the working drawing was created in the 6th page Fig. based on general graphics (trigonometry) and this has acquired the approval of a customer based on this, it is considered that a cause is for a customer to be necessarily unable to understand a drawing correctly.
[0006] This invention is made in view of the above-mentioned technical problem, and aims at offering the contents presentation approach of manufacture shown so that he can understand the contents of manufacture about the equipment ordered enough to a customer.

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MEANS

[Means for Solving the Problem] This invention is the contents presentation approach of manufacture of showing the contents of manufacture about the equipment ordered by the customer, and is characterized by showing a customer the animation which shows the whole equipment and a decomposition condition with engineering drawing of equipment.
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[0010] Moreover, being provided as a file which can be performed by computer is suitable for said contents of manufacture.
[0011] Moreover, this invention is a medium which records the file which presents the contents of manufacture about the equipment order by the customer, and is characterize by to record the file for the contents presentation of manufacture on which the animation which shows engineering drawing, the whole equipment, and the decomposition condition of equipment to a computer according to the input from a menu screen is display alternatively.
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[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained based on a drawing.
[0013] Drawing 1 is a flow chart which shows the procedure of the contents presentation approach of manufacture concerning this operation gestalt. First, a manufacturer hears the order contents of equipment from an orderer (S11). Next, a working drawing as a manufacturer shows to drawing 2 based on order contents is created (S12). In this case, CAD (computer ray dead design) using a computer performs a working drawing. This working drawing all consists of the 6th page Fig. and assembly Fig. of elegance. In addition, a drawing is omitted in part within limits from which manufacture does not serve as impossible.
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[0015] Moreover, in this phase, the specification about each part article etc. is inputted and the file of a part list is created (S14). That is, information, such as quantity used about each part article in an identification number (unique number in this list), a name of article, a lot number/form, and equipment, a manufacture name, a price, and an order place, is memorized as a table.
[0016] Next, all the components modeling data of 3DCAD obtained as mentioned above are outputted in animation software with the gestalt which can be read (S15). For example, in 3D CAD system, it is suitable to

change into the DXF format which the STL format is used widely, once outputs in this STL format, may set this to animation software, and is used. In addition, data format should just be the [redacted] format which can be read not only in an above-mentioned thing but in animation software.
[0017] Next, all the outputted components modeling data are read into the software for animation creation (for example, commercial Ray Dream Studio (trademark)) (S16). And it positions about each part article and equipment is assembled (S17).
[0018] Next, camera angle is determined so that it may become decomposition, an include angle good for expressing the animation of attachment, and a good location (S18). The animation (quiescence Fig.) of the whole configuration of equipment as shown in drawing 4 is obtained by it.
[0019] And the situation that constitute the timing to which each part article stands it still, and the timing to operate from on the time line, and animation moves is created. A motion of animation is determined by this. As shown in drawing 5 , the animation which moves to the condition that the components which are assembling equipment separated, one by one is created by this. In addition, signs that the part is decomposed are shown to drawing 5 by by clicking the part of equipment. Thus, it is suitable to create the animation decomposed gradually.
[0020] Here, although the data about each part article are three-dimension data, when an angle type etc. is determined, it is not necessary to hold three-dimension data. Then, unnecessary data are deleted and let them be two-dimensional data. Each part article is freely movable in the condition that camera angle does not change with this. On the other hand, when camera angle changes, two-dimensional data will be connected. However, in the explanation about equipment, the screen which changes and shows camera angle is not so required, and in order to use many screens which each part article leaves one by one, without changing camera angle, there is no inconvenience not much. And by making it two-dimensional data in this way, the data about each part article are lessened, and the load in animation software can be made small, and an intelligible screen can be constituted.
[0021] Moreover, also in the assembly condition, it has all data about each part article. Assignment of the actuation in animation software can carry out very comfortably that what is necessary is just to specify migration as each part article by this when a decomposition condition is shown.
[0022] Furthermore, in the process which creates this time line, components to carry out the rarefaction are taken out and the transparency factor of that component is set up according to time amount (S19). That is, the rarefaction is carried out by clicking one component to the timing as which the component was specified. Moreover, the shade of transparency is set up by assignment of transparency. For example, as shown in drawing 6 , by carrying out the rarefaction of the outside casing etc., internal components come to appear and a internal structure can be seen. Since especially the data of each part article exist, the components which are back [the] will be automatically displayed by the rarefaction.
[0023] And a computer creates an image data file according to the rendering activity of shading, browning, etc. (S20). A video file is created by it while CG screen is formed of this.
[0024] Moreover, an isometric drawing is created based on the predetermined exploded view in animation (S21). An isometric drawing is drawing showing the decomposition condition of each part article seen from the fixed include angle as shown in drawing 7 . This isometric drawing can add and create an alphabetic character required for the two-dimensional data about each part article etc.
[0025] Thus, when each file is created, HTML (HyperText Markup Language) is used and each file is arranged in this (S22). That is, when saying that an alphabetic character is inputted, and a click decomposes components further in an image, or it assembles, or in progressing previously by check click, it arranges and sets up a video file on HTML. Moreover, the alphabetic character for moving to the display of engineering drawing, 3DCAD part drawing, an isometric drawing, and a part list etc. is arranged. In addition, as long as it has the same function, you may be not HTML but other files.
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desired alphabetic character etc. using the usual browser etc. Furthermore, in each scene of decomposition animation, the decomposition animation [redacted]t the part is displayed by clicking a de[redacted]d part, and the external view of the component and the use data about components are displayed by clicki[redacted]omponents further.
[0027] Moreover, it is in the condition which displayed the part list, and it is suitable to move to the appearance about the component and the screen of a specification by clicking desired components. In this case, it is also suitable to show whether it is attached in the screen in front of the number screen of the animation of decomposition by being return and animation and displaying to the screen of the components concerned at which part of equipment.
[0028] Furthermore, it is suitable to also create the animation about a maintenance. For example, it is good for animation to explain how a maintenance is performed by preparing a maintenance screen as shown in drawing 8 . In this drawing 8 , the procedure of inspecting whether the gear of a reducer etc. operating normally is shown. That is, a reducer is inspected by detecting the load of attachment and this handle for a handle to a revolving shaft. Spring BAKARI is used for detection of this load. And the screen around which pulls spring BAKARI in a jig and the direction of an arrow head for a handle, and a handle turns is shown a ** table, and it expresses judging a normal thing because the memory of spring BAKARI is 1kg or less as animation in that case.
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[0030] Moreover, when a decomposition check activity is shown, while displaying a tool, it is suitable to display the member operated by the tool in a special color. For example, the activity which removes a bolt can be plainly explained by displaying in red the bolt which displays and operates a wrench.
[0031] It is suitable for such contents of manufacture of equipment that the operating company by the side of equipment manufacture brings a notebook computer, calls on a customer, displays engineering drawing, animation, etc. on a notebook computer, and shows it to a customer. Moreover, it is good to provide a customer with CD-ROM which recorded data to the customer on this occasion. Moreover, data can also be offered by communication link. Thus, a customer can see the contents of manufacture after equipment delivery by offering data using a notebook computer etc.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the flow chart which shows the procedure in this invention.
[Drawing 2] It is drawing showing the example of a display of engineering drawing.
[Drawing 3] It is drawing showing the example of a display of 3DCAD part drawing.
[Drawing 4] It is drawing showing the example of a display of the equipment external view by animation.
[Drawing 5] It is drawing showing the example of a display of the decomposition structure by animation.
[Drawing 6] It is drawing showing the example of a display of the rarefaction by animation.
[Drawing 7] It is drawing showing the example of a display of an isometric drawing.
[Drawing 8] It is drawing showing the example of a display of the maintenance by animation.

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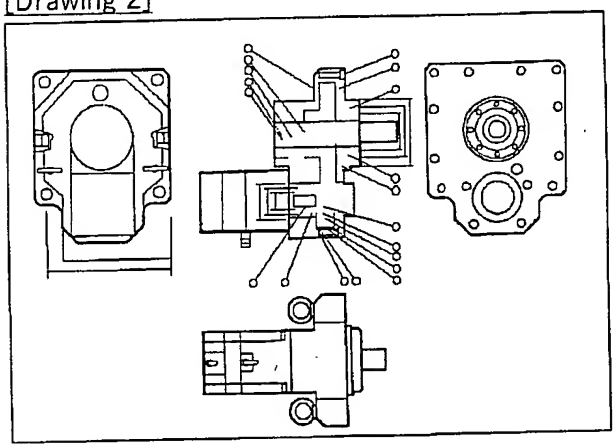
DRAWINGS

[Drawing 2]



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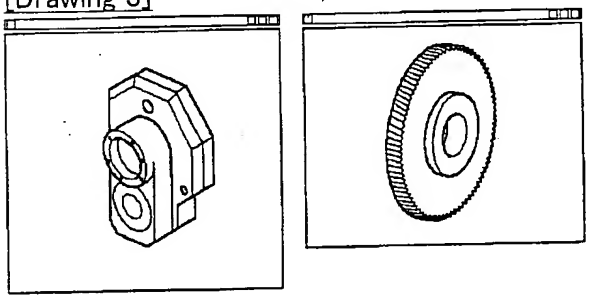

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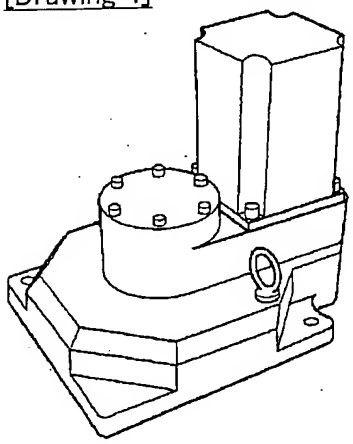
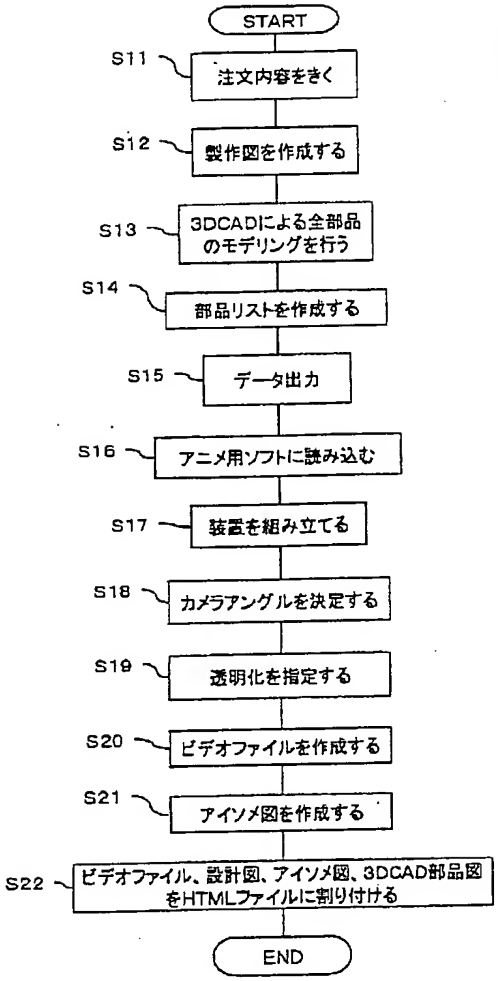


[Drawing 1]



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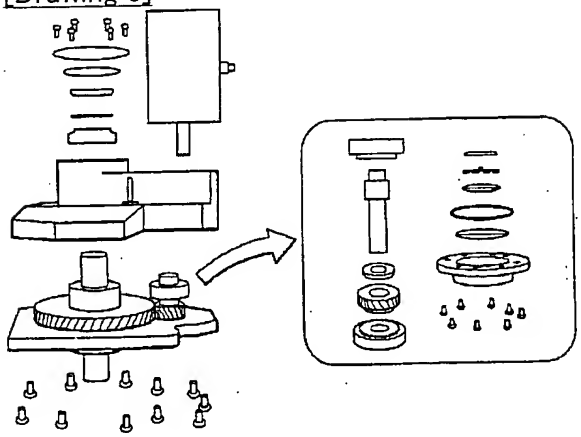
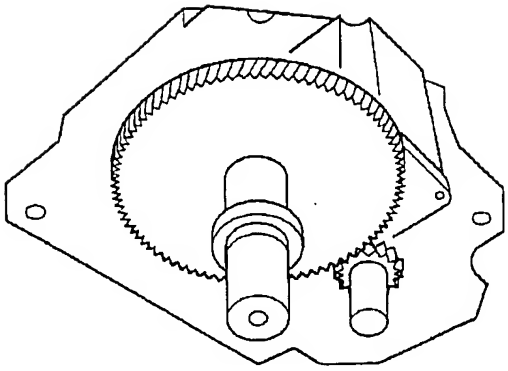
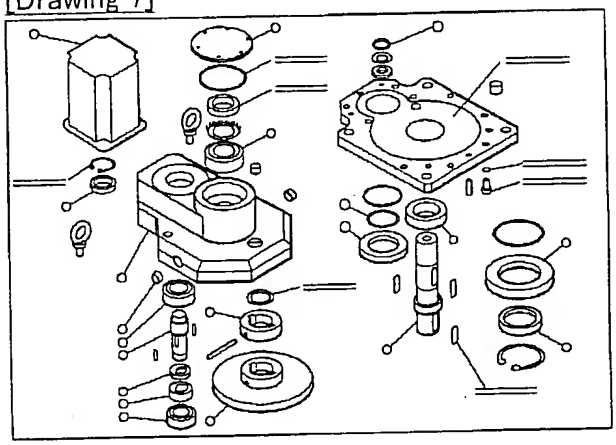


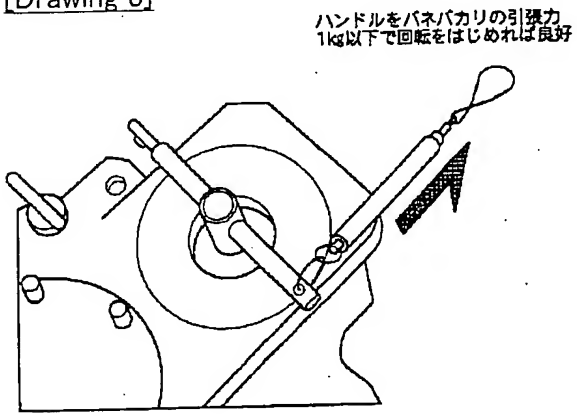
[Drawing 6]



[Drawing 7]



[Drawing 8]



[Translation done.]

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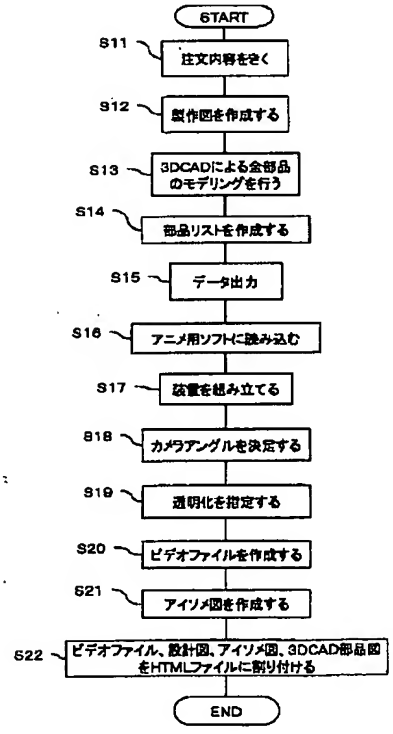
Ｆターム(参考)　5B046 AA04 BA10 DA10 FA20 G
KA01

(54)【発明の名称】　製作内容提示方法および媒体

(57)【要約】
【課題】　製作内容を顧客にわかりやすく提示する。
【解決手段】　３ＤＣＡＤにより全部品をモデリングし（Ｓ１３）、アニメーションソフトに取り込んで（Ｓ１６）、ビデオファイルを作製する（Ｓ２０）。そして、設計図、アイソメ図、アニメーションビデオファイルなどをＨＴＭＬファイルに割り付ける。従って、このＨＴＭＬファイルを閲覧することで、各種ファイルを表示することができる。



【特許請求の範囲】
【請求項１】　顧客から注文され[redacted]置についての製作内容を提示する製作内容提示方法であって、
装置の設計図とともに、装置の全体および分解状態を示すアニメーションを顧客に提示する製作内容提示方法。
【請求項２】　請求項１に記載の方法において、
前記設計図、アニメーションに加えて、アイソメ図および３次元ＣＡＤ部品図を提示する製作内容提示方法。
【請求項３】　請求項１または２に記載の方法において、
前記製作内容は、コンピュータで実行可能なファイルとして提供される製作内容提示方法。
【請求項４】　顧客から注文される装置についての製作内容を提示するファイルを記録する媒体であって、
コンピュータに、
メニュー画面からの入力に応じて、装置の設計図および装置の全体および分解状態を示すアニメーションを選択的に表示させる製作内容提示用のファイルを記録した媒体。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、顧客から注文される装置についての製作内容を提示する製作内容提示方法に関する。
【０００２】
【従来の技術】従来より、各種の装置が、顧客の注文に応じて生産されている。このような注文生産では、顧客が装置の設計図を作成する場合もあるが、通常は顧客の注文に応じて装置生産者が装置設計図を作成する。そして、この装置製作図および納期、価格などを顧客に提示し、顧客に承認が得られた場合にその装置を生産し納入する。
【０００３】このように、顧客に図面を提示して承認を受けているため、顧客の注文に応じた装置が納入されることになる。
【０００４】
【発明が解決しようとする課題】ところが、実際に装置を納入した際に、その装置が顧客の描いていたイメージと異なり、トラブルが発生する場合もままある。
【０００５】これは、製作図が一般的な製図法（三角法）に基づく６面図で作成され、これに基づいて顧客の承認を得ているが、顧客が必ずしも図面を正しく理解できないことに原因があると考えられる。
【０００６】本発明は、上記課題に鑑みなされたものであり、注文される装置についての製作内容を顧客に十分理解できるように提示する製作内容提示方法を提供することを目的とする。
【０００７】
【課題を解決するための手段】本発明は、顧客から注文される装置についての製作内容を提示する製作内容提示方法であって、装置の設計図とともに、装置の[redacted]び分解状態を示すアニメ[redacted]ンを顧客に提示を特徴とする。
【０００８】このように、本発明によれば、顧する製作内容の情報にアニメーションが含まれこのため、顧客に図面についての知識がなくてされる装置がどのようなものであるかを誤りなきる。そこで、実際に製作した装置を納入したいて、顧客の認識と異なっているという問題がとを効果的に防止できる。
【０００９】また、前記設計図、アニメーショて、アイソメ図および３次元ＣＡＤ部品図を提とが好適である。これらは、アニメーション作時に作成できるため、非常に少ない労力で作成ができる。
【００１０】また、前記製作内容は、コンピュ行可能なファイルとして提供されることが好適
【００１１】また、本発明は、顧客から注文さについての製作内容を提示するファイルを記録であって、コンピュータに、メニュー画面から応じて、装置の設計図および装置の全体およびを示すアニメーションを選択的に表示させる製示用のファイルを記録したことを特徴とする。
【００１２】
【発明の実施の形態】以下、本発明の実施形態て、図面に基づいて説明する。
【００１３】図１は、本実施形態に係る製作内法の手順を示すフローチャートである。まず、は、注文者から装置の注文内容をきく（Ｓ１１に、製作者が注文内容に基づき、図２に示すよ図を作成する（Ｓ１２）。この場合、製作図はュータを利用したＣＡＤ（コンピュータ・エイデザイン）により行う。この製作図は、全部品および組み立て図からなる。なお、製作が不能い範囲内で一部図面は省略される。
【００１４】この製作図に基づき３ＤＣＡＤに品のモデリングを行う（Ｓ１３）。すなわち、ついてその６面図から３ＤＣＡＤモデルを作成の３ＤＣＡＤモデルによって、図３に示すよう３Ｄ表示が行える。なお、この３ＤＣＡＤモデは、市販の３ＤＣＡＤプログラムを用いて行うきる。
【００１５】また、この段階で、各部品につい等を入力して、部品リストのファイルを作成す４）。すなわち、各部品について、識別番号（トにおけるユニークな番号）、品名、品番／型において使用される数量、メーカー名、価格、の情報がテーブルとして記憶される。
【００１６】次に、上述のようにして得られたＤの全部品モデリングデータをアニメーション

おいて読み込み可能な形態で出力する（Ｓ１５）。例えば、３ＤＣＡＤシステムではＳＴ[redacted]式が広く利用されており、このＳＴＬ形式で一旦出力しておき、これをアニメーションソフトにおいてよく利用されているＤＸＦ形式に変換することが好適である。なお、データ形式は、上述のものに限らず、アニメーションソフトにおいて読み込めるデータ形式であればよい。

【００１７】次に、出力された全部品モデリングデータをアニメーション作成用ソフト（例えば、市販のレイドリームスタジオ（商標））に読み込む（Ｓ１６）。そして、各部品について位置決めして装置を組み立てる（Ｓ１７）。

【００１８】次に、分解、組付けのアニメーションを表現するのによい角度、よい位置となるように、カメラアングルを決定する（Ｓ１８）。それによって、図４に示すような装置の全体構成のアニメーション（静止図）が得られる。

【００１９】そして、各部品の静止されるタイミングや動作させるタイミングをタイムライン上で構成してアニメーションの動く状況を作成する。これによってアニメーションの動きが決定される。これによって、例えば、図５に示すように、装置を組み立てている部品が離れた状態へ順次動いていくアニメーションが作成される。なお、図５には、装置の部分をクリックすることによって、その部分が分解される様子が示されている。このようにして、段階的に分解されていくアニメーションを作成することが好適である。

【００２０】ここで、各部品についてのデータは３次元データであるが、アングルなどを決定した場合には、３次元データを保持しておく必要はない。そこで、不要なデータは削除して、２次元データとする。これによって、各部品は、カメラアングルが変わらない状態で、自由に移動できる。一方、カメラアングルが変わる場合には、２次元データをつなぎ合わせることになる。しかし、装置についての説明の場合には、カメラアングルを変更して見せる画面はあまり必要でなく、カメラアングルを変更せずに各部品が順次離れていくような画面を多く利用するため、あまり不便はない。そして、このように２次元データにすることによって、各部品についてのデータを少なくして、アニメーションソフトにおける負荷を小さくでき、またわかりやすい画面を構成できる。

【００２１】また、組立状態においても、各部品についてのデータはすべて持っておく。これによって、分解状態を示す場合において、各部品に移動を指定するだけでよく、アニメーションソフトにおける動作の指定が非常に楽に行える。

【００２２】さらに、このタイムラインを作成する工程の中で、透明化したい部品を取り出し、その部品の透明度ファクターを時間に応じて設定する（Ｓ１９）。すなわち、１つの部品をクリックすることにより、その部品が指定されたタイミングで透明化される。またの濃淡は、透明度の指定に[redacted]設定する。例えに示すように、外側のケー[redacted]グなどを透明化で、内部の部品が見えるようになり、内部構造とができる。特に、各部品のデータは存在してめ、透明化により、その背部にある部品が自動されることになる。

【００２３】そして、シェーディング、色つけンダリング作業により、コンピュータが画像デイルを作成する（Ｓ２０）。これによって、Ｃ形成されるとともに、ビデオファイルが作成さ

【００２４】また、アニメーションの中の所定に基づいて、アイソメ図を作成する（Ｓ２１）メ図は、図７に示すような一定の角度から見た分解状態を示す図である。このアイソメ図は、ついての２次元データに、必要な文字などを追成することができる。

【００２５】このようにして、各ファイルが作場合には、ＨＴＭＬ（HyperText Markup Langu利用し、この中に各ファイルを配置する（Ｓ２なわち、画像内に文字を入力し、さらにクリッ部品を分解するとか、組み立てるという場合やリックで先に進む場合には、ＨＴＭＬ上にビデルを配置して設定する。また、設計図、３ＤＣ図、アイソメ図、部品リストの表示へ移るためどをも配置する。なお、同様の機能を有するもば、ＨＴＭＬでなく他のファイルであってもよ

【００２６】このようにして、設計図、３ＤＣ図、装置の分解アニメーション、アイソメ図、ト等を統合したファイルが作成される。そこでァイルをノートパソコンなどのブラウザを利用し、所望の文字などをクリックすることで、通ウザなどを利用して、各部品の製作図、３Ｄ部み立て図、アイソメ図、装置の分解組立アニメを見ることができる。さらに、分解アニメーシ場面において、所望の部分をクリックすること部分についての分解アニメーションが表示され部品をクリックすることでその部品の外観図おについての使用データが表示される。

【００２７】また、部品リストを表示した状態の部品をクリックすることで、その部品についおよび仕様の画面に移動することが好適である合、分解のアニメーションの数画面前の画面にニメーションで、当該部品の画面まで表示してどの部分に取り付けられているかを見せることある。

【００２８】さらに、メンテナンスについてのションも作成しておくことが好適である。例えに示すようなメンテナンス画面を用意し、どのてメンテナンス作業を行うかをアニメーション

るとよい。この図８においては、減速機のギアなどが正常に動作するかを検査する手順を[redacted]ている。すなわち、回転軸にハンドルを取付、このハンドルの負荷を検出することで、減速機の検査を行う。この負荷の検出には、バネバカリを用いる。そして、アニメーションでは、バネバカリをハンドルに引っかけ、矢印方向に引っ張りハンドルが回る画面を補表示し、その際にバネバカリのメモリが１ｋｇ以下であることで、正常であることを判断することを表示する。

【００２９】このように、アニメーションによれば、実際の作業容量を動作で示すことができる。そこで、初めて作業する者でも容易にその作業内容を認識することができる。

【００３０】また、分解点検作業を示す場合に工具を表示するとともに、その工具で操作する部材を特別な色で表示することが好適である。例えば、レンチを表示して操作するボルトを赤色で表示することで、ボルトをはずす作業をわかりやすく説明できる。

【００３１】このような装置の製作内容は、装置製造側の営業者がノートパソコンを持参して顧客を訪ね、ノートパソコン上に設計図やアニメーションなど表示して顧客に見せることが好適である。また、この際に顧客に対しデータを記録したＣＤ－ＲＯＭ等を顧客に提供するとよい。また、データは、通信で提供することもできる。このように、データを提供することによって、顧客はノートパソコンなどを使って、装置納入後におい作内容を見ることができ[redacted]

【００３２】

【発明の効果】以上説明したように、本発明に顧客に提示する製作内容の情報にアニメーショれている。このため、顧客に図面についての知ても、製作される装置がどのようなものであるなく認識できる。そこで、製作の承認後に実際た装置を納入した場合において、顧客の認識といるという問題が生じることを効果的に防止で

【図面の簡単な説明】

【図１】　本発明における処理手順を示すフロトである。

【図２】　設計図の表示例を示す図である。

【図３】　３ＤＣＡＤ部品図の表示例を示す区

【図４】　アニメーションによる装置外観図の示す図である。

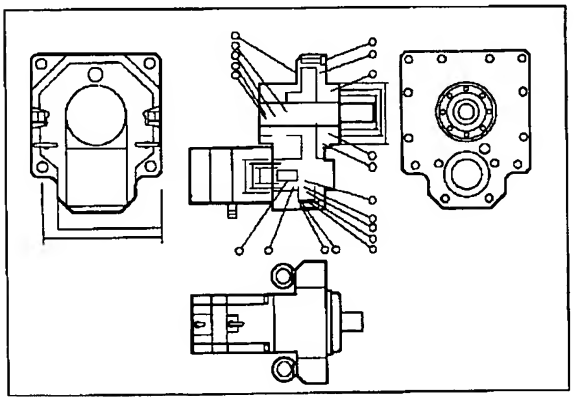
【図５】　アニメーションによる分解構造の表す図である。

【図６】　アニメーションによる透明化の表示図である。

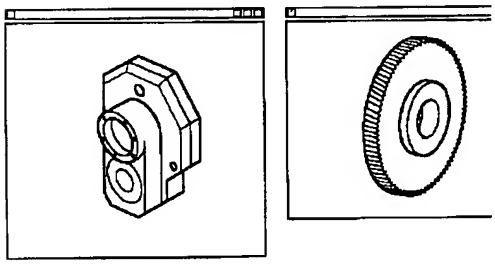
【図７】　アイソメ図の表示例を示す図である

【図８】　アニメーションによるメンテナンスを示す図である。

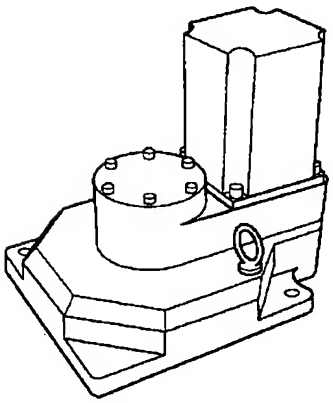
【図２】



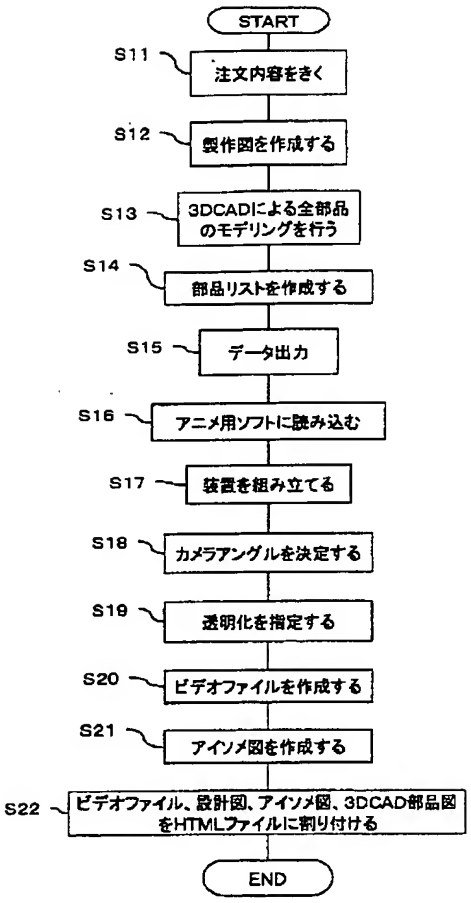
【図３】



【図４】

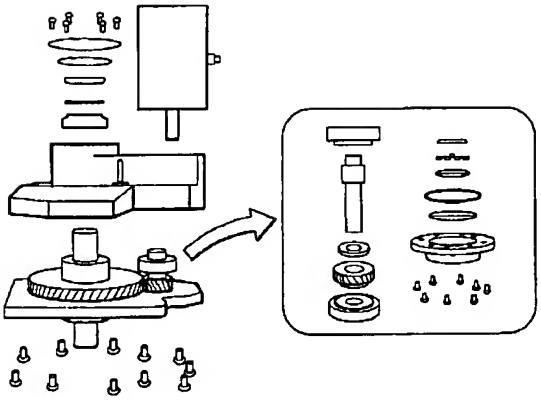


【図１】

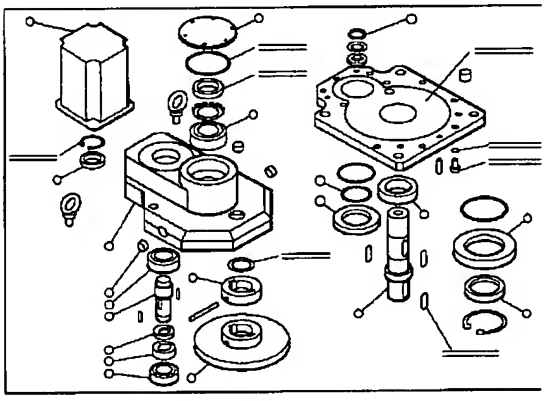

START
S11
注文内容をきく
S12
製作図を作成する
S13
3DCADによる全部品のモデリングを行う
S14
部品リストを作成する
S15
データ出力
S16
アニメ用ソフトに読み込む
S17
装置を組み立てる
S18
カメラアングルを決定する
S19
透明化を指定する
S20
ビデオファイルを作成する
S21
アイソメ図を作成する
S22
ビデオファイル、設計図、アイソメ図、3DCAD部品図をHTMLファイルに割り付ける
END

【図６】

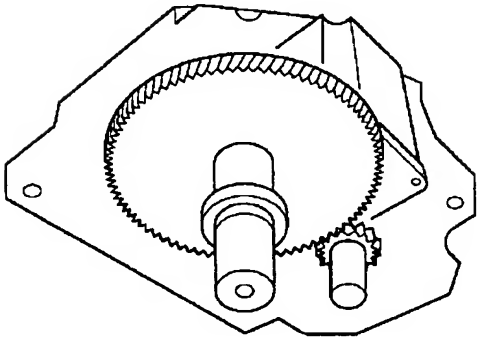
【図５】

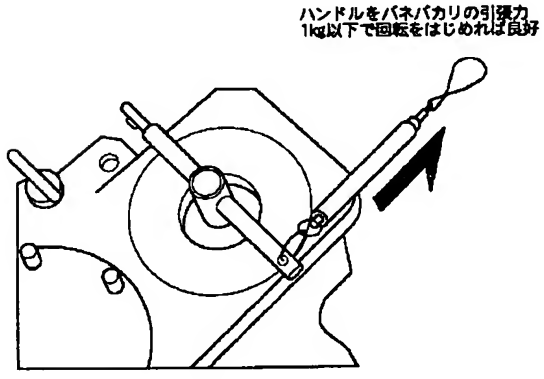


【図７】



【図８】




ハンドルをバネバカリの引張力
1kg以下で回転をはじめれば良好